



ZFK

Docket No.: 1567.1057

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

Duck-Chul HWANG

Serial No. 10/693,925

Group Art Unit: 1745

Confirmation No. 4145

Filed: October 28, 2003

Examiner: Ben Lewis

For: POSTIVE ELECTRODE FOR LITHIUM SULFUR BATTERY AND LITHIUM SULFER  
BATTERY COMPRISING SAME

**RESPONSE TO RESTRICTION REQUIREMENT AND REQUIREMENT OF ELECTION  
OF SPECIES**

Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

Sir:

In response to the Office Action mailed November 29 2006, having a shortened period for response set to expire on December 29, 2006, the following remarks are provided.

**I. Restriction**

At page 2 of the Office Action, the Examiner required restriction between the following inventions:

Group I, claims 1 – 9 and 10 – 33, drawn to a positive electrode for a lithium sulfur battery and

Group II, claims 34 – 36, drawn to a method of producing a positive electrode.

In response, Applicants elect **Group I, claims 1 – 33**. The election is made with traverse, for the reasons provided below.

**II. Election of Species**

Also at page 2 of the Office Action, the Examiner stated that if invention I is elected, then an election of species is required for the positive active material being selected from the group

consisting of elemental sulfur ( $S_8$ ) and a sulfur-based compound.

In response, applicants elect **elemental sulfur ( $S_8$ )**. Further, applicants elect a species that does not further comprise a coating layer of a polymer or an inorganic material.

Claims 1 – 5 and 7 – 29 read on the elected invention.

Because of the election of elemental sulfur, applicants are not required to make an election of a species of a sulfur-based compound. Further, since applicants have not elected a species containing a coating layer, it is respectfully submitted that applicants are not required to elect a species of a polymer coating layer or a species of an inorganic coating layer.

### III. Traversal of the Restriction Requirement and Election of Species

Applicants respectfully traverse the restriction requirement on the grounds that Examiner has not shown that there would be a serious burden for the Examiner to examine all of the claims of the application. In particular, although the groups of claims differ in particulars, the burden on the Examiner to examine all of the claims in the application is slight in comparison to the burden that would be placed on the applicant to file a separate application for each group of claims.

In particular, Groups I, claims 1 – 33 and Group II, claims 34 - 36 are clearly sufficiently related such that they clearly should be examined together, since a thorough search of a positive electrode for a lithium sulfur battery comprising a positive active material with a particle size D (v, 50%) of approximately 10  $\mu\text{m}$  or less, the positive active material being selected from the group consisting of elemental sulfur ( $S_8$ ), a sulfur-based compound, and a mixture thereof as recited by independent claim 1 would overlap to a considerable extent with a search of a method of producing a positive electrode including pulverizing  $S_8$  powder as recited by independent claim 34.

Therefore, the restriction requirement should be withdrawn.

Likewise, with respect to the requirement of an election of species, it is respectfully submitted that the number of species is sufficiently small that there would not be a burden on the Examiner to search and examine all of the species in all of the claims of the application together. Therefore, the requirement for election of species should be withdrawn and all the claims of the application should be examined together.